

# **Optimizing Operational Control of U.S. Army Attack Aviation**

**A Monograph  
by  
Major Kirk D. Taylor  
United States Army**

**School of Advanced Military Studies  
United States Army Command and General Staff College  
Fort Leavenworth, Kansas**

**First Term AY 99-00**

Approved for Public Release: Distribution is Unlimited

**SCHOOL OF ADVANCED MILITARY STUDIES**

**MONOGRAPH APPROVAL**

*DTIC QUALITY INSPECTED 3*

**20000322 084**

**Major Kirk D. Taylor**

**Title of Monograph: Optimizing Operational Control of U.S. Army Attack Aviation**

**Approved by:**

**Monograph Director**

---

**LTC Kim Summers**

**Director, School of Advanced  
Military Studies**

---

**COL Robin P. Swan, MMAS**

**Director Graduate Degree Program**

---

**Philip J. Brookes, Ph.D.**

**Accepted this 20<sup>th</sup> Day of November 1999**

## **ABSTRACT**

OPTIMIZING OPERATIONAL CONTROL OF U.S. ARMY ATTACK AVIATION  
by MAJ Kirk D. Taylor, USA, 55 pages.

**The trend in the employment of U.S. forces in contingency operations suggests that the National Command Authority favors air centric responses to military operations. When this trend is coupled with the decreasing likelihood of large-scale armored warfare, a logical question arises as to whether U.S. Army attack aviation capabilities are fully exploited under its current doctrinal employment methodology. Specifically, are attack helicopters better utilized under the operational control of the Joint Forces Air Component Commander (JFACC) as opposed to the ground commander?**

This monograph examines the benefits and drawbacks of assigning the operational control of U.S. Army attack aviation to the JFACC. The affirmative perspective offers three issues to support JFACC control. The inclusion of attack helicopters to the pool of assets available for tasking by the JFACC would offer much needed relief to over-burdened air forces. Second, U.S. Army doctrinal employment of attack aviation fails to fully exploit the capabilities of attack helicopters. Last, the advances in technology has resulted in the emergence of a new "way of war," and that all military professionals are imbued with a moral obligation to evolve warfighting doctrine to meet the new challenges of the 21<sup>st</sup> Century. The counter perspective supports continuing the ground commander's operational control of attack aviation. This argument focuses on attack aviation's inseparable link to the terrestrial domain and the combined arms team.

This monograph proposes that a utopian option of attack aviation assets transitioning from one command relationship to another is not a viable solution. Therefore, the analysis of the two command relationship options examined is based on weighing the marginal benefits accrued under JFACC operational control versus the potential for catastrophic failure in a medium to high intensity land war. The conclusions from this comparison of the two command relationships indicate that the ground commander should retain operational control of attack helicopters.

## TABLE OF CONTENTS

	Page
I. Introduction .....	1
II. The Advantages of JFACC Control .....	11
The Over-Burdened Air Force .....	12
The U.S. Army's Failure to Fully Exploit Attack Helicopters .....	14
The Moral Imperative to Evolve Warfighting .....	19
Final Thoughts on JFACC Control of Attack Aviation .....	21
III. The Disadvantages of JFACC Control .....	23
Attack Aviation: Its Linkage to the Terrestrial Domain .....	24
Attack Aviation: A Member of the Combined Arms Team .....	28
Final Thoughts on Ground Commander Control of Attack Aviation ...	34
IV. Conclusion .....	36
V. Epilogue .....	41
Endnotes .....	44
Bibliography .....	50

## Introduction

The common thread that binds the intellectual works of military theorists from Sun Tzu to the present is the purposeful search for a more coherent systematic approach to waging war. The impetus that sparks the need for new military theories are usually changes in technology and societal order.<sup>1</sup> Advances in technology, such as those wrought by the industrial revolution, necessitated the development of a systems-based approach to combat due to the accelerated growth of complexity on the battlefield.<sup>2</sup> These new technologies and changes in the individual's relationship to the nation-state resulted in an expansion in the size of armies in the field, weapons lethality, command and control capabilities, sustainment capacity, and dispersion of forces on the battlefield.<sup>3</sup> The residual impact of these far ranging differences from previous battlefield physics led to the disappearance of the decisive battle.<sup>4</sup> In effect, militaries gained a degree of resiliency that enabled armies to sustain battlefield defeats without culminating in a capitulation of the enemy's will.<sup>5</sup> This attribute continues to reflect the nature of militaries today. A cursory examination of U.S. combat operations in the past decade provides anecdotal

evidence to support this assertion. The military forces of Iraq and Yugoslavia continue to retain the capability and will to wield a disruptive influence in their respective regions despite suffering lop-sided battlefield defeats at the hands of coalition and NATO forces. These examples, combined with the emerging proclivity of the National Command Authority (NCA) to favor an air power centric response to military contingencies, point to the poignancy of a dialogue that examines the optimal organization of U.S. forces.

United States forces entered the Gulf War with an organizational concept that was untried in a medium to high intensity conflict. Namely, the command proponent for different Areas of Responsibilities (AOR) were divided by region and assigned to a specified warfighting Commander in Chief (CINC). The new organizational structure also contained key billets for functional area commanders directly subordinate to the CINC whose responsibilities were to integrate the capabilities of all joint and coalition forces within their functional purview. The Joint Forces Air Component Commander's (JFACC) responsibilities are to plan and supervise the execution of all air operations in support of the Joint Force Commander's (JFC) operational objectives.<sup>6</sup> This new

organizational structure was a response to the increasing need to synchronize the efforts of all services and coalition members towards a shared aim. Colonel David Deptula, a member of the JFACC's air planning staff during Operation Desert Storm, noted that not all lessons learned from Operation Desert Storm were worthy of retaining.

The Coalition was fortunate to have an overwhelming number of air forces in the Gulf War. When elements of one force component chose to bypass the joint air planning process, the JFACC, in the interest of avoiding doctrinal strife, could afford to rely upon forces directly under his command to accomplish theater objectives. In the future the luxury of each Service component force doing its own thing may not be an option. Decisions on the use of force must be made on the basis of how they can have the most effect in accomplishing the joint force commander's theater objectives.<sup>7</sup>

The noteworthy success of joint air efforts during Operation Desert Storm provides evidence as to the potential of future force application from air platforms under the current organizational structure. However, Colonel Deptula's depiction also delineates the need for Service components to endeavor to work harder towards full integration into joint air operations. Some airpower advocates believe that the potential of fully integrated air operations, that were in a small measure realized in Operation Desert Storm, represent a revolution in military affairs. Among these advocates is General Ronald R.

<sup>8</sup>Fogleman, former Chief of Staff of the United States Air Force, who states, "The maturation of air power in the late twentieth century has combined with a number of other factors to move the United States toward a new American way of war."<sup>9</sup> If Colonel Deptula and General Fogleman are correct, an examination of how best to employ U.S. Army attack aviation within the context of joint air operations is intrinsically topical.

This study will examine the benefits and risks of shifting U.S. Army attack aviation's mission focus away from the support of the ground maneuver commander to support of the JFACC's theater air operations. U.S. Army attack aviation's current organizational structure, training and culture could pose as barriers to implementing a change of this nature.<sup>10</sup> The intent of this study is not to expound on any potential difficulties in this area or offer solutions to the same. Rather, given the possibility that a compelling argument exists to support a shift in U.S. Army attack aviation employment, the assumption is that the U.S. military is capable of resourcing and implementing the required changes to support a more effective method of force application.

A contextual basis is also necessary to facilitate a meaningful discussion of the benefits and risks associated

with a possible realignment of missions and roles within the air combatant community. In order to determine the most effective use of attack aviation, an assessment of how to best determine the military capabilities of potential adversaries is needed to refine the decision criteria. In this study, the military potential of an adversary is not considered well represented solely by the sum of its individual components. More exactly, the potential military power of an adversary derives its combat power from both the sum destructive power of its forces and the synergy resultant from the interactions amongst its diverse parts towards a shared aim.<sup>11</sup> This definition recognizes the contributions of both quantity (mass) and quality (synchronized combat actions) in generating combat power. Harking back to the resiliency of modern militaries, an attack targeted solely at the destruction of the enemy's mass forces is unlikely by itself to achieve the desired capitulation of the enemy's will.<sup>12</sup> Therefore, the criteria for the best possible control relationship for U.S. Army attack aviation is which option best facilitates the destruction of the enemy's capability to coherently direct divergent military actions towards a shared aim. As such, the degree to which U.S. Army attack aviation contributes to this goal is the basis for the qualitative

assessment of the benefits of each force organizational option.

An argumentative position to the above assertion might claim that Allied operations in France during World War II invalidates this criteria, but that example does not fit into the context of the current world security environment. World War II represented a total war effort waged against a peer military. The Allied aim was to deny Nazi Germany the total domination of Continental Europe, and to gain the Axis Power's unconditional surrender.<sup>13</sup> However, no threat to vital U.S. security interests of this magnitude is foreseen for the next twenty-five years.

The evidence to support the above position is anecdotally supplied by the drawdown of U.S. military forces following the collapse of the former Union of Soviet Socialist Republics (USSR). If the assumption concerning the likelihood of combating a peer competitor in the next quarter century is errant, then the subsequent drawdown of U.S. military forces is of far greater consequence than any change proposed in this monograph. A flawed contextual threat environment of this magnitude would invalidate any conclusions drawn herein. However, if U.S. policy makers are correct in their assessment of the near-term threat, the U.S. military confronts a future without the specter of

an enemy capable of threatening the continued existence of the United States as a sovereign nation. The logic path follows that U.S. military operations will continue to support limited political aims.<sup>14</sup> Therefore, the type of campaigns that characterized the liberation of France during World War II have no relevance to a discussion of how best to organize combat forces for the first decades of the twenty-first century.

The methodologies for achieving the destruction of a rival military's coherency are varied. Shimon Naveh states in his book, In Pursuit of Military Excellence, that a general systems theory approach to attack is required for military success. In essence, this predicates the necessity for an operational approach to modern warfare.<sup>15</sup> The key element of which is the use of an operational maneuver group that exploits a penetration of a broad front beyond the tactical depth of the battlefield.<sup>16</sup> The intent of such a maneuver is to create shock within the opposing military's system. Thus, the shock unhinges the opposition's ability to respond to the crisis in any manner but a piecemeal fashion. The result is the destruction of a rival military's cohesion and the impetus for the subjugation of the enemy's will to that of the attacker.<sup>17</sup> This is perhaps an overly simplified summation of Naveh's

thesis, but it serves as an intuitively congruent framework for interpreting the merits of how best to employ U.S. Army attack aviation.

The above framework, while intuitively correct, does not apply well in its entirety with the thesis of this paper due to its ground centric perspective. As noted earlier, the apparent trend of current U.S. force application favors an air centric approach to intervention. The dichotomy that seems to exist between Naveh's thesis and the NCA's current predilection towards airpower solutions are not as expansive as they appear at first glance. This monograph argues that the deep operational maneuver that Naveh deems as essential is well accounted for in emerging airpower theory. The goal of Naveh's deep operational maneuver is to generate paralysis across the depth of the enemy's battlespace, and current airpower theories provide an alternative tool to realize this concept through the application of combat power from the air. This position is best illustrated by the concept of parallel warfare. Colonel Deptula defines this strategy as follows:

Parallel Warfare is the simultaneous application of force (in time, space, and at each level of war) against key systems to effect paralysis on the subject organization's ability to function as it desires. The object of parallel warfare is

effective control of the opponent's strategic activity.<sup>18</sup>

Deptula's concept of the proper employment of airpower, as applied in parallel warfare, is the application of Naveh's principles on a higher technological level. Deptula's thesis characterizes parallel warfare as neither an annihilist nor an attritionist strategy, but instead it proposes a third strategy option of paralysis.<sup>19</sup> The benefits of this strategy appear evident given the outcome of Operation Desert Storm. The cost in lives and national treasure were not nearly as high as anticipated for coalition forces due in large measure to the success of air combat operations that preceded the ground offensive.<sup>20</sup> Until a new strategy of force application emerges that better meets the demands of the NCA at lower risk, the U.S. military can expect a continuation of air centric responses to military contingencies that capitalize on the tenets of parallel warfare.

The above is the framework within which this monograph will view the issue of U.S. Army attack aviation employment. Several issues that include the original purpose and design of U.S. Army attack aviation platforms unnecessarily cloud this debate. Those purposes and designs were formulated for a different military challenge

than that which U.S. military leaders are facing today.<sup>21</sup> A third world war against a peer rival is a very remote possibility for the foreseeable future.<sup>22</sup> Therefore, the validity of holding to the past methodologies of utilizing U.S. Army attack aviation assets within the context of a passé threat environment is questionable and good fodder for debate.

To facilitate an unbiased discussion of the merits and drawbacks of shifting the operational control of U.S. Army attack aviation to the JFACC, this paper will seek to present balanced perspectives that outline both the benefits and risks associated with this shift in mission focus. The conclusions that the author reaches are based on weighing the operational benefits of JFACC operational control of U.S. Army attack aviation against the disadvantages of wresting control of attack aviation away from the ground commander in a major theater of operations.

## **The Advantages of JFACC Control**

The need for the U.S. Military to continue to develop and perfect joint solutions to complex military problems was clearly illustrated by Colonel Deptula's characterization of joint air efforts in Operation Desert Storm. The past practices of duplicate capabilities in separate services are a luxury the military can ill-afford in the era of post Cold-War budgets. The popular mantra amongst service members of "doing more with less" rings with validity. In light of the omnipresent rise in operations and personnel tempo, an integrated methodology to prosecute theater air operations is needed.

Each of the military services has agreed, at the corporate level, that joint operations are the key to success on the battlefields of the future. As the lead service for the development of joint air doctrine, the U.S. Air Force is wrestling with the question of how best to integrate all the elements of air power to support the mission of the JFC. Arguably, the most effective use of U.S. Army attack aviation assets is as a full participant in joint air operations.<sup>23</sup> A quick assessment of the capabilities resident in attack aviation assets can easily lead to the assumption that those forces are best utilized under the operational control of the JFACC. Upon deeper

investigation, the intuitive impression appears legitimate. The three most poignant supporting arguments are the need to relieve an over-burdened Air Force; the implication that the U.S. Army fails to fully exploit attack aviation assets; and that a moral imperative compels a shift of operational control to better implement the tenets of parallel warfare.

**The Over-Burdened Air Force**

The U.S. Army can easily empathize with the strain, precipitated by an increase in contingency operations and deployments, that the U.S. Air Force is currently under. This problem is so severe in the Air Combat Command (ACC) that overworked people may leave in droves.<sup>24</sup> As such, alleviating this problem represents the highest priority for the ACC Commander.<sup>25</sup> The logical solution to this quandary is to either lessen the number and size of contingency operations or employ additional capabilities resident in the current force. However, the volume of contingency operations and the size of the force necessary to execute those missions are beyond the control of the service components. The number of airpower platforms in the inventory is also relatively constant. The solution must come from finding under-utilized assets available in the current inventory. The ACC Commander is working to

find comparable, substitute capabilities in the sister services.<sup>26</sup> U.S. Army attack aviation represents a legitimate option to assume some of the burden.

Attack aviation has demonstrated in the past, on a limited scale, that it can contribute to joint air operations at the tactical, operational, and strategic levels.<sup>27</sup> Attack aviation provides capabilities that enable it to assume roles and missions now assigned to other services.<sup>28</sup>

The Army must allow army aviation to venture away from acting merely as a combined arms team player. Aviation must seek out opportunities beyond those that it is now comfortable with and be a principal player on the joint arms team.<sup>29</sup>

This transformation away from a focus as a member of the combined arms team to a member of the joint arms team is overdue.<sup>30</sup>

The appropriateness of an over-burdened Air Force as an argumentative support for shifting operational control of attack aviation to the JFACC may seem lacking in substance from an Army perspective. This is especially true in light of the difficulties the Army is experiencing with respect to its own operational tempo. However, a more holistic perspective that expands beyond service loyalties is appropriate when addressing issues of joint readiness. It is timely to remind the reader that a contextual

assumption of this monograph was the NCA's predilection to favor an air centric response to military contingencies, and that this trend would continue into the future. The ability of airpower assets to respond to military requirements as determined by the NCA is of significant strategic importance. For this reason, a crisis of decreased readiness in the Air Force is germane to this discussion.

**The U.S. Army's Failure to Fully Exploit the Attack Helicopter**

An additional argument that supports JFACC operational control of attack aviation is the perception that the U.S. Army is not fully exploiting the capabilities of attack aviation. This criticism falls largely into three categories. The first issue centers on the lack of training and corporate understanding of how to integrate attack aviation operations into the other joint air assets. The second area of concern centers on the lack of adequate structure and doctrine in the Army to full exploit the deep operations capabilities of attack aviation. The final topic of debate takes aim at the cultural mentality of husbanding attack aviation resources for a mass attack. None of the above three areas of critique are meant to denigrate the contributions that attack aviation makes to the maneuver combat team, but they do point to a possibly

more effective method of employing attack aviation on the battlefield.

A disconnect in training and integration between attack aviation and the rest of the airpower community is understandable. The aviation branch is a relative neophyte in comparison to the rest of the aviation community. The branch was only recently established in 1983.<sup>31</sup> However, this fact is not an excuse for continuing along a path that remains Army centric to the exclusion of joint operations. The specter of the existence of a problem is illustrated in the feedback from U.S. Air Force officers liaison to Task Force Hawk in the recent air operations in Kosovo.

The biggest problem is an "ethnocentric" Army view of the world. The only service less joint is the Navy and right now they look very purple. Couple this with the traditional Army approach to battlefield leadership, maneuver commanders command everybody, regardless of background. Sadly, the less than sterling training the aviation community receives in mission planning training reinforces this approach.<sup>32</sup>

Every Air Force officer here realizes that their (Army Aviation) plans to do deep operations are madness - especially going it all alone. They do want EA-6B and F-16-CJ coverage, but don't know how to integrate with them.<sup>33</sup>

The question exists whether this is a systemic or isolated shortcoming? However, to argue that Task Force Hawk was not a fair representative of the attack aviation community fails to address the core problem discussed above. The

criticisms are more properly aimed at the V Corps planning staff as opposed to the army aviators. The issues raised by the liaison officers focuses on actions that fall within the responsibilities of the corps planning staff. The argument that the V Corps planning staff is not representative of the U.S. Army is blatantly flawed. Officers who receive their training in the School of Advanced Military Studies (SAMS) populate all U.S. corps and division planning staffs. The formalized training that characterizes SAMS results in a relatively homogenous pool of planners. Hence, the falseness of the argument is highlighted in regards to V Corps as an isolated case. If the V Corps planning staff is a fair representation of the other corps and division staffs, the assertion that the Army's lack of experience and training in joint air operations does limit the effectiveness of attack aviation.

The second issue that points to the inability of the U.S. Army to fully exploit the potential of attack aviation is a lack of organizational structure and doctrine to support deep operations. The Army's keystone warfighting doctrine, Field Manual 100-5, defines deep operations as:

Operations designed in depth to secure advantages in later engagements, protect the current close fight, and defeat the enemy more rapidly by denying freedom of action and disrupting or

destroying the coherence and tempo of its operations.<sup>34</sup>

The pivotal role deep operations play in Airland Battle doctrine is universally accepted in the Army. However, the question remains whether the U.S. Air Force, with attack aviation under JFACC operational control, is bettered postured to execute deep operations? The U.S. Army responded to the need to plan and execute deep operations by forming a Deep Operations Coordination Cell (DOCC). The U.S. Army has formalized DOCCs at the corps level, and efforts are ongoing to do the same within divisions. These organizations are skeletal in garrison and many of the personnel earmarked to support the DOCC are dual-hatted (their primary responsibilities are divided). This method of staffing DOCCs is open to criticism. The implication is that planning and supervising deep operations is a "part-time" job. That philosophy is incongruent with central role of deep operations in Army doctrine. Additional criticisms are also leveled at a lack of adequate doctrine.

Currently, the U.S. Army is not prepared to fight and win the deep operations associated with prosecuting and achieving the vertical velocity of attack. It does not have sufficient deep operations doctrine, nor is it properly resourced for a deep operations cell at the division or corps level. In order to effectively plan, coordinate, and execute rapid simultaneous, and decisive operations to the depth of the land component commander's area of responsibility, the

Army must establish an organization similar to the Air Force's Air Operations Center (AOC).<sup>35</sup>

The recommendation above addresses a need for the U.S. Army to improve resourcing and training for deep operations, but it fails to appreciate the fiscal reality of current budgetary constraints. Despite the veracity of the need for improvements, the recommendations appear unrealistic. The irony of the recommendation is that it proposes a workable solution to the problem, but the author fails to advance the proposal. The expertise and resources that are stated as lacking are resident in the AOC. As stated earlier, this type of stove-piped capabilities no longer make sense.

The third discussion point, that illustrates the U.S. Army's inability to employ attack aviation to its fullest potential, is the Army's fixation on husbanding attack aviation assets for a mass attack. This organizational bias is formalized in Army Aviation doctrine. Field Manual 1-100 states,

Aviation forces fight as units and must be given unit missions. Aviation units conducting tactical operations are given maneuver objectives rather than individual targets.<sup>36</sup>

The devastating effect of attack helicopters when employed in mass was clearly displayed during Operation Desert Storm. In the near-term future, the likelihood of

detecting targets on a distributed or empty battlefield that warrants the commitment of such overwhelming force is questionable.<sup>37</sup> This mentality of massing attack aviation, coupled with the anticipated nature of the distributed battlefield, poses a serious dilemma. The recognition of this problem is not limited to the U.S. Air Force. U.S. Army aviators are voicing similar complaints.

We have limited the aviation commander's capability to take advantage of the dynamics of the battlefield and audaciously maneuver his attack battalion to capitalize on acquired opportunities. The final result is that we hold the attack battalion in reserve until a suitable target has been found and fixed that we believe is worth the risk of committing our AH-64s. Therefore, our most technologically advanced aviation systems are committed only a few hours a day. In the long run we don't destroy as much as we could; lose the use of priceless reconnaissance; and loss the initiative with our most potent and mobile systems on the battlefield.<sup>38</sup>

The U.S. Army's cultural bias towards the mass attack is possibly rooted in a preferred corporate self-image.

But something happened to the Army in its passage through World War II that it liked; and it has not been able to free itself from the sweet memories of the Army that liberated France and swept victoriously into Germany. That heady experience has marked the Army with an image of itself that is distinctly different from that which it had before and, more importantly, from its experiences since.<sup>39</sup>

The implication is that the cultural bias to mass attack aviation is tied to the Army's preferred self-image. As

such, it is far more deeply rooted than is customarily appreciated. The probability that the Army will shift attack helicopter employment towards support of joint air operations in the near future is not likely.

### ***The Moral Imperative to Evolve Warfighting***

The moral imperative to evolve warfighting doctrine, training and acquisition is several faceted and related to the two previous discussion points. Senior leaders of each of the services have a moral obligation to guide the direction of each of their services into the future with an aim towards retaining its viability as a tool of national power. General Shinseki's, the Army Chief of Staff, intention to transform the Army into a medium-weight force reflects this type of leadership.<sup>40</sup> Another form that a moral imperative takes is expressed in Field Manual 100-1 in its definition of the Army ethos, "A sense of duty compels us to do what needs to be done at the right time despite difficulty or danger."<sup>41</sup> In more succinct terms, it is the duty of U.S. Military leaders to cast aside service centric practices and doctrine.

No longer do we see single service solutions employed to deal with contingencies that confront our nation. This development indicates that America has not only the opportunity but the obligation to transition from a concept of annihilation and attrition warfare - that places

thousands of young Americans at risk in brute, force-on-force conflicts - to a new way of war.<sup>42</sup>

The evidence to support a claim that the U.S. Army still has work to accomplish before it succeeds in discarding its institutional tendency to shy away from full joint cooperation was chronicled in the previous discussions supporting JFACC operational control of attack aviation. The pressing urgency to effect the changes required is highlighted by further excerpts from the Air Force liaisons to Task Force Hawk in Kosovo.

I'm deeply concerned about the potential of an ambush, and young aviators going down deep behind enemy lines. This resistance to fall under the Combined Air Operations Center seems to turn a blind eye towards things like joint planning (including combat search and rescue coordination). They plan to do a pick-up by the wingman at the moment of a shoot-down. I'm going nuts... they are ignorant and arrogant. They desperately need to integrate and are far from ready to do so.<sup>43</sup>

Perhaps a certain degree of hyperbole is attributable to this passage, but the reader must remember that these criticisms were leveled at not individuals but the V Corps planning staff. Earlier, the probability that this staff was representative of planning staffs' service-wide was assessed as high. Ergo, a moral imperative exists to evolve joint practices and doctrine, but the anecdotal evidence from the Nation's most recent conflict suggests

that joint air operations are far from fully integrated. Attack aviation is the single best asset available in the U.S. Army inventory capable of supporting joint air operations, but the Army is clearly reticent to place these assets under the operational control of the functional commander of its own volition. Perhaps, the moment is now for the Joint Force Commanders to force the U.S. Army to cede operational control of attack aviation to the JFACC.

### ***Final Thoughts on JFACC Control of Attack Aviation***

The notion of releasing operation control of attack helicopters to the JFACC is unnerving to a vast majority of the corporate Army. The reasons for such apprehensions are valid and detailed in the discussion that follows. However, the position that attack helicopters are poorly integrated into joint air operations is difficult to dispute. This lack of integration has the potential to manifest itself in a loss of lives and airframes as outlined above. In a vision of future wars that begin with air operations as a precursor to land combat, the overarching interests of mission effectiveness will require a breakdown of narrow and parochial views.<sup>44</sup> The shifting of operational control of attack aviation to the JFACC might represent an excellent opportunity to breakdown such barriers. However, the other side of the operational

control of attack aviation debate must occur before forming  
a final opinion.

## **The Disadvantages of JFACC Control**

The counter-point view to JFACC operational control of attack aviation is also compelling. The proponents for the continued control of attack aviation under the ground commander offer two critical points to support their position. The first issue focuses on the intrinsic linkage of attack aviation platforms to the terrestrial domain. In simpler terms, the employment of attack helicopters is governed by the same considerations as traditional land based weapon systems. The significance of this perspective is that no other functional commander is better able to understand and profitably employ attack aviation than the ground commander.<sup>45</sup> The second issue that supports the land commander's control of attack aviation is the institutionalized inclusion of attack helicopters into the Army's combined arms team.<sup>46</sup> The implications of this last issue have far ranging effects. U.S. Army corps and divisions are organized for optimal employment of combat, combat support, and combat service support forces within the framework of Airland Battle doctrine.<sup>47</sup> Each unit contributes to the combat effectiveness of the corps or division combat system. Attack aviation units are not an exception to this principle. In fact, attack aviation is

an integral member of the combined arms team, and its exclusion from the ground commander's maneuver scheme would precipitate a crisis amongst both planners and commanders alike. This presumed crisis is due to the many capabilities that attack aviation provides as a maneuver force to the ground commander. As stated earlier, airpower advocates believe that the need for robust land forces may have passed, but Army Vision 2010 clearly articulates the fallacy of this notion.

With the end of the Cold War, a prominent theory arose that there would no longer be a need for large land forces, that power projection and national military strategy could primarily be carried out through precision strikes using technologically advanced air and naval forces. This "standoff" approach would reduce the level of U.S. involvement and commitment and thus the requirement for large land forces. Reality proved that theory to be invalid.<sup>48</sup>

It is the examination of the two supporting arguments in concert with the reality alluded to in Army Vision 2010 that gives validity to the position that the land commander should retain operational control of attack aviation.

**Attack Aviation: Its Linkage to the Terrestrial Domain**

A defining characteristic of attack aviation is its intrinsic relationship to the terrestrial domain. Field Manual 1-100 emphatically states that, "aviation operates in the ground regime. This cardinal principle defines aviation's role as an element of landpower."<sup>49</sup> The

foundation of this premise rests on the elements of force protection and optimal employment of attack aviation assets.

At first glance, a relationship of close proximity to the earth may appear oxymoronic in enhancing the survivability of attack aviation assets, but that conclusion would fail to appreciate the significance of attack aviation's night fighting capabilities. An enemy's ability to visually acquire an attack helicopter is negatively impacted at night regardless of altitude, but the same is not true of radar acquisition capabilities. By utilizing terrain features to mask its exposure to radar detection, an attack helicopter maximizes its survivability. Unlike fixed-wing aerial platforms that retain the capability to apply effective combat power with precision munitions from above small arms and short-range surface-to-air missile systems fires, attack aviation must operate in close proximity to the earth to maximize its munitions delivery efficiency. The relationship between survivability and proximity to the earth is perhaps best illustrated from an attack aviator's perspective.

Those of us who work, fly, or fight with Army Aviation have a different perspective of aviation. Aviation, to us, is mud and dirt. A shining aircraft is not our goal. To us, it can be the target of a heat-seeking missile.<sup>50</sup>

Despite the unique capabilities that attack aviation might offer the JFACC, the physical attributes of attack helicopters preclude these assets from escaping the same terrain dynamics, namely the need to utilize cover and concealment, that impact other ground forces.<sup>51</sup>

A further illustration of the significance of the attack aviation/terrestrial domain relationship is provided in an examination of the major theaters for which the Department of Defense currently conducts deliberate plans. The flat and barren terrain that dominates the Arabian Peninsula simplifies the impact of terrain on attack helicopter operations. With the exception of magnifying the significance of low-level flight and night operations for survivability, the terrain in that region does not significantly complicate the planning necessary to effectively employ attack aviation. The same is not true for the Korean Peninsula.

The Korean Peninsula is punctuated with rough mountains, large streams, and rugged narrow passes with only about twenty percent of the peninsula suitable for cultivation.<sup>52</sup> The impact of this high relief terrain has implications for the traditional employment of attack aviation. An attack helicopter battalion will normally use

the mass attack technique with three companies.<sup>53</sup> This methodology of attack aviation employment is well suited for the terrain in Southwest Asia. However, the Korean terrain will seldom allow a commander to employ an attack aviation battalion in mass.<sup>54</sup> The profound impact of Korea's terrain on attack aviation operations is implicit given the required diversity of planned missions that attack aviation is currently intended to perform. The appreciation for the impact of terrain on combat operations is resident in the ground commander and his staff. Therefore, a reasonable presumption is that the ground forces can best understand the factors of terrain that influence the employment of attack aviation and maximize its combat effects.

A related argument, to the above impact of terrain on attack aviation, is the inherent need for the ground commander to exercise operational control over attack aviation assets. The premise that underlies this position is that the low-level milieu in which attack aviation must operate places those assets within the battlespace controlled by the ground commander. The coordination of the airspace over the ground forces requires extensive planning. The battlefield is well populated with short-range air defense systems, cannon and rocket artillery, and

other platforms that mandate extensive coordination to ensure that attack aviation does fall victim to fratricide. However, there are other considerations that go beyond friendly force protection of attack aviation assets.

Recalling the restricted terrain characteristics of the Korean Peninsula, "attack aviation has little chance for success unless properly controlled and employed."<sup>55</sup> This issue relates to the intrinsic relationship between attack aviation and the other members of the combined arms team discussed in the following section, but it also emphasizes the best level at which attack aviation is controlled with regards to operational effectiveness. When discussing the aviation lessons learned from Operation Desert Storm, Brigadier General James Hesson opined about the proper level of operational control of attack aviation.

A lesson learned, then, is that any considerations for moving or centralizing at a higher echelon the divisional army aviation assets could be a serious mistake.<sup>56</sup>

The reality of the tactical battlefield dictates that the ground commander in contact is the best agent to control or integrate attack aviation fires, minimize fratricide, and synchronize direct and indirect fires.<sup>57</sup> Again, the proximity of attack aviation's operating milieu to the other ground forces necessitates that attack aviation

operations align in time and space to other ground force systems. Parallel planning optimally aligns these separate battlefield systems. The loss of operational control of attack aviation would significantly damage the land commander's ability to facilitate effective attack aviation operations within his area of operations.

**Attack Aviation: A Member of the Combined Arms Team**

An earlier discussion in this paper, accepted the possibility that attack aviation's organizational structure, training, and culture were barriers to the effective implementation of JFACC operational control of attack aviation. This problem was set aside as surmountable given a compelling argument for the transference of operational control to the JFACC. The same assumption, however, is imprudent when applied across the spectrum of all U.S. Army ground forces. Also mentioned earlier, the employment of attack aviation assets within the framework of brigade and higher combat operations is securely embedded in both U.S. Army force structure and doctrine. A withdrawal of control of attack aviation from the ground commander would invalidate many key assumptions inherent in the rationale for the current U.S. Army force level and the doctrinal employment of ground forces. This is due mainly to the unique contributions that attack

aviation makes to the combined arms team. A discussion of these capabilities and the impact of their loss to the ground commander are examined below.

The criticality of attack aviation to the ground commander will continue to grow as the U.S. Army evolves in an effort to retain its relevancy as a tool of national power.<sup>58</sup> Attack aviation assets are currently the best combat element in the U.S. Army force structure to rapidly deploy and fight against any foe. Despite the Eighty-Second Airborne Division's innate ability to rapidly upload, deploy and parachute light infantry forces into a hostile area, these forces lack the firepower to repel an armored or mechanized force without the support of attack aviation assets.<sup>59</sup> It is the essential contributions of attack aviation that gives U.S. Army rapid response forces the firepower necessary to validate its employment in forced entry missions against all but lightly armed resistance.<sup>60</sup>

The criticality of attack aviation to the combined arms team is better understood when contrasted to the earlier view of attack helicopter operations. At attack aviation's inception it was viewed solely as a fire support element for infantry forces. That old mentality closely resembled the employment of armor early in its development.

However, that passé perspective no longer applies. Attack aviation is regarded as another element of the ground maneuver forces available to the land commander. Moreover, the attack helicopter has proven that it effectively performs many of the same missions normally attributed to armor formations. This is not meant to negate the need for tanks, but attack aviation assets are now an integral component of the ground commander's maneuver plan.<sup>61</sup>

The necessity of attack aviation's integration in the ground maneuver plan is best illustrated by focusing on the contributions it makes in terms of the Battlefield Operating Systems (BOS). This methodology is appropriate since the underlying rationale for corps and divisional structures is based on the synergistic benefits derived from balancing each BOS function with respect to the others. Attack aviation contributes significantly to three of the seven BOS functions that concern the corps and division commanders. A discussion of the roles attack aviation performs in support of the maneuver, fire support, and mobility BOSSs provides compelling evidence of the combined arms team's reliance upon attack aviation.

Each BOS is essential to the overall success of any military mission, but maneuver is the function that perhaps

best characterizes the underlying theme of U.S. Army doctrine. Maneuver is defined as,

Maneuver is the movement of combat forces to gain positional advantage usually in order to deliver - or threaten delivery of - direct and indirect fires.<sup>62</sup>

Attack helicopter units give the ground commander a force that can move rapidly and apply firepower at any depth in the battlefield.<sup>63</sup> Operation Desert Storm provided numerous examples of how attack helicopters operated as a maneuver force at depths beyond the advance of infantry and armor forces.

Attack helicopters from the 1st Infantry Division (Mechanized) were the first Army forces to cut Highway 8 leading out of Kuwait City. The 24th Infantry Division (Mechanized) control of the Euphrates River causeway was accomplished by attack helicopters. The XVIII Airborne Corps used attack helicopters to cut off fleeing forces north of Basra on the last night of the conflict.<sup>64</sup>

Combined with armor and infantry, combat aviation forms the nucleus of the Army's maneuver forces.<sup>65</sup> Attack aviation also supports the close battle. Field Manual 1-100 states,

Army attack helicopters can support the close fight by securing an armored or mechanized force's flanks. They can also attack decisive points and critical targets deep in the enemy's rear area. By destroying follow-on forces, command and control nodes, and logistical supply assets before they can be employed against friendly forces, attack aviation significantly influences tomorrow's close fight.<sup>66</sup>

Attack aviation's identity as a primary member of the ground maneuver forces is also evidenced by its relationship with contributors to other BOS functions. Attack aviation, like infantry and armor, is supported by other BOS systems such as air defense, fire support, intelligence, and engineers.<sup>67</sup> The degree to which attack aviation is incorporated into the ground maneuver plan is well documented. If ground forces lost operational control of attack aviation, the ground commander would lose the ability to conduct the type of deep operations illustrated by the Operation Desert Storm vignettes. Ergo, the loss would deny the ground force the ability to dominate the enemy beyond the range of its direct fire systems and invalidate many of the precepts upon which Airland Battle doctrine is based.

Additionally, Attack aviation assets significantly contribute to the fire support BOS function. Fire support includes the delivery of conventional and smart munitions by armed aircraft, land and sea-based fire systems.<sup>68</sup> Attack aviation contributes to this BOS in several different manners. Field Manual 1-100 defines attack aviation's support as follows:

Army aviation, as a maneuver force, contributes to fire support operations by acquiring targets; providing laser designation; adjusting indirect

fires; and providing command and control of artillery units. Attack aviation units also contribute to fire support by engaging targets with close in fire support and conducting support by fire missions.<sup>69</sup>

Attack aviation expands the ground commander's battle space and allows the commander to exert his influence by the extension of direct fires and observed fires beyond the capabilities of any other systems that otherwise exist in corps or divisions.

Attack aviation contributes to the Mobility function of the BOS in several key aspects. Joint Publication 1-02 defines mobility as, "a quality or capability of military forces which permits them to move from place to place while retaining the ability to fulfill their primary mission."<sup>70</sup> Due to the possibility of inadvertently running into the enemy by surprise, the movement to contact and subsequent meeting engagement is not a preferred tactical option.<sup>71</sup> The employment of attack helicopters as a screening or covering force can drastically reduce this risk to the ground commander. Several examples in both live combat and training scenarios exist to support this assertion. The 2d Infantry Division employed its aviation brigade as a covering force in Team Spirit 1992 with favorable results.

The attack battalions, with a multiple launch rocket system (MLRS) battalion supporting, created a moving screen line of interlocking

fields of observation through the depth of the covering force area across a 20-kilometer front. The agility of the helicopters allowed the brigade commander to selectively pull systems off the screen line to perform hasty attacks to mass fires anywhere in the covering-force area.<sup>72</sup>

In a similar fashion, 3rd Armored Division employed its attack helicopters to secure the right flank of the division as it made the end run around the Iraqi entrenchments in Operation Desert Storm.<sup>73</sup> Additionally, attack aviation contributes to mobility of the force by performing aerial reconnaissance. By identifying obstacles in the path of advancing forces and locating bypass routes or safe crossing sites, attack aviation saves valuable time and helps the force continue to move unimpeded.<sup>74</sup> These enhancements to mobility coupled with attack aviation's ability to traverse terrain unencumbered by fixed obstacles on the earth elevates the combined arms team into a unique dimension in maneuver warfare.<sup>75</sup>

#### **Final Thoughts on Ground Commander Control of Attack Aviation**

The fundamental relationship between attack aviation and the remainder of the ground maneuver team is profound. The evidence presented details the essential capabilities that attack aviation assets contribute to the warfighting potential of Army ground maneuver forces. The core competency that provides the U.S. Army with supremacy over any near-term potential enemy is the speed and depth in

which it can conduct simultaneous operations. The loss of attack aviation would place this superiority in jeopardy.

## **CONCLUSION**

There is little doubt that both perspectives ring true as to whom should exercise operational control of attack aviation. The best of both worlds would allow for attack aviation to flow unencumbered from one mission focus to the next based on the nature of the mission. This utopian option, however, is ill conceived at best. Noted military author and columnist Ralph Peters cautions against this approach, "A very real danger is asking any system to do too many things, resulting in a system that does nothing especially well."<sup>76</sup> Field Manual 1-100 also alludes to an inability to absorb additional missions when it discusses as a training challenge the difficulty of maintaining readiness with the increase in operational tempo.<sup>77</sup> The training capacity and adaptability of attack aviation resembles a zero-sum choice. Attack aviation can focus and train to either command relationship and the missions associated with each, but to ask attack aviation to focus on a wider mission set invites the problem depicted by Mr. Peters.

The essential question that the JFC must answer is whether the benefits accrued by the Air Force outweigh the costs suffered by the Army when attack aviation is placed under the operational control of the JFACC?

The Air Force can certainly make great use of attack aviation. The Air Force has both the corporate knowledge of how to effectively fight from the sky, and the best command, control, communications, computers, and intelligence (C4I) infrastructure to enable optimum employment of individual aerial weapons platforms. When these factors are coupled with the previously stated contextual basis of the NCA's growing proclivity for air centric responses to military interventions, the JFACC operational control perspective gains even greater validity. However, the incremental benefit of incorporating attack aviation assets within the Master Air Attack Plan (MAAP) is questionable. In 1994, former chiefs of staff of the Army and Air Force, Generals Carl Vuono and Larry Welch, respectively, questioned the utility of attack helicopters as Close Air Support (CAS) weapon systems.

Attack helicopter units lack the speed, lethality, and flexibility to enable the Joint Force Commander to mass, concentrate, or shift air support intra-theater, which is a vital characteristic of CAS. We both firmly believe that the original concept of Air Force fixed wing aircraft providing support in close proximity to friendly forces remains valid and properly defines CAS today.<sup>78</sup>

CAS is but one mission set for which the Air Force might employ attack helicopters, but other problems exist when contemplating the use of attack aviation as a joint air

asset. The comparatively short range of attack helicopters limits the effectiveness of these assets when employed in other than tactical missions. The ability of attack helicopters to influence operational and strategic targets is dependent upon those targets proximity to the forward line of troops. Hence, despite the Air Force's superior ability to plan and control air operations, the physical limitations of attack helicopters diminishes the actual benefits that the JFACC might accrue by exercising operational control.

Additionally, the pro-JFACC perspective fails to appreciate the degree to which attack aviation is immersed in Army doctrine, tactics, and culture. The loss of operational control of attack aviation would precipitate a complete upheaval in doctrinal employment of corps and divisions, and a radical decline in the combat effectiveness of the maneuver team. The resultant imbalance between the capabilities of corps and divisions before and after the loss of operational control of attack helicopters would generate a need to reexamine the U.S. Army force structure, roles, and missions. The detrimental impact of such a change is difficult to overestimate.

The pro-JFACC operational control of attack aviation argument was very persuasive after a cursory examination.

The most probable and least dangerous scenario for future military interventions favors the pro-JFACC position, but the benefits derived are marginal. The least probable but most dangerous scenario features a large mechanized foe, and the risks to the land forces are great. A gambler might easily accept the odds of the pro-JFACC position and role the proverbial dice. However, the U.S. Military is not in the gaming business. It is difficult to not sound melodramatic, but the "ante" on this table is the treasure of the United States. The U.S. Air Force has demonstrated that it possesses the capability to "cover" the more probable, low-intensity, limited political aim air operations that have characterized the past eight years. Attack aviation represents a "nice to have" capability to the Air Force as opposed to the "need to have" requirement of the Army. It is appropriate for both the Army and the Air Force to investigate greater opportunities for attack aviation and the joint air community to conduct joint air training, but wrenching operational control of attack aviation away from land commander is imprudent.

The significant role attack aviation plays in ground commanders' plans is unlikely to reverse course. The vision articulated by General Shinseki sets as an imperative the necessity of increasing the deployability of

U.S. Army forces. This increase in deployability is achieved in part by the rearming of heavy divisional forces with wheeled armored vehicles.<sup>79</sup> The impact of the rearming is several-fold. A force outfitted with wheeled as opposed to tracked armored vehicles offers a higher degree of strategic deployability, but the change also accepts a cost in terms of weapon system lethality versus a mechanized enemy force. In light of the changes called for by General Shinseki, it is reasonable to assume that attack aviation will take on an even greater proportion of the missions formerly assigned to tank forces.

## **Epilogue**

An observation concerning the fundamental difference between the organizational cultures of the U.S. Army and U.S. Air Force is appropriate here. While conducting the research for this monograph, the author noted an apparent difference in the methodology that both organizations utilize to capture and share corporate knowledge.

The U.S. Army relies heavily upon formalized doctrine in the form of field manuals and other official publications. This is most likely attributable to the nature of ground combat. The combat effectiveness of land forces is predicated on the synchronization of a myriad of differentiated units within a comparatively small battlespace. In essence, a bureaucracy of well-rehearsed tactics, techniques, and procedures are a necessity to ensure that each individual unit's activities within the battlespace contribute to a shared aim and reduce chaos. The popular impression that the Army is an organization that only grudgingly accepts doctrinal change is probably a fair representation, but to fault the Army for a bias that values constancy ignores the nature of land combat.

The U.S. Air Force, while also focused on a shared aim, is not as constrained in terms of battlespace or as complex in terms of coordinating a multitude of separate

actions to achieve a tactical objective. The result is a lesser need to control chaos. This does not imply that orchestrated air operations are simple to plan and execute. Rather, it suggests that the Air Force, by virtue of its operating milieu, is better suited to implement and embrace frequent changes in its methodology of employing airpower. The anecdotal evidence to support this claim is found in the secondary role that doctrine appears to play in the continuing dialogue of how to best fight from the air. Instead, the Air Force appears to thrive on discussions in trade publications that continually question current methodologies and assumptions.

It is the author's opinion that this fundamental difference that distinguishes between the two organizational cultures is the greatest obstacle to further advances in joint operations between the services. Attack aviation shares many physical attributes with the fixed-wing aircraft of the sister services, the implication of this similarity is that attack aviation forces should also embrace change with the same relative ease as its air brethren. This intuitive leap of logic fails, however, to appreciate the significance of attack aviation's profound relationship to the terrestrial domain. Attack aviation cannot break free of the burdens of slow doctrinal change

for the same reasons that the Army as a whole is unable to rapidly adopt change. Whether under the operational control of the JFACC or land commander, attack aviation shares the same operating environment with the land forces. Therefore, until the Army can institute more expeditious means of incorporating doctrinal change, attack aviation, for better or worst, will continue to evolve its operational concepts at the same slow pace.

---

## ENDNOTES

<sup>1</sup> James J. Schneider, "How War Works: The Origins, Nature, and Purpose of Military Theory," *Military Theory Readings* (Fort Leavenworth, KS: USACGSC, 1995) discusses the need for theory to evolve with changes in technology.

<sup>2</sup> James J. Schneider, "Cybershock: Cybernetic Paralysis as a New Form of Warfare," *Military Theory Readings* (Fort Leavenworth, KS: USACGSC, 1995) 5.

<sup>3</sup> John Keegan, *A History of Warfare* (London, Albert A. Knopf Inc., 1995) 355-356.

<sup>4</sup> Russell F. Weigley, "American Strategy from Its Beginnings Through the First World War," *Makers of Modern Strategy from Machiavelli to the Nuclear Age* (New Jersey: Princeton University Press, 1986) 429.

<sup>5</sup> James A. Schneider, *Vulcan's Anvil: The American Civil War and the Emergence of Operational Art* (Fort Leavenworth, KS: USACGSC, 1995) 31.

<sup>6</sup> Joint Publication 3-56.1, *Command and Control for Joint Air Operations* (Washington D.C.: Joint Electronic Library) II-2.

<sup>7</sup> David A. Deptula, "Firing for Effect: Change in the Nature of Warfare," *Defense and Airpower Series* (Virginia: Aerospace Education Foundation, 1995), 17.

<sup>8</sup>

<sup>9</sup> Ronald R. Fogelman, "Advantage USA: Airpower and Asymmetric Force Strategy." *Air Power History* 43 no.2 (Summer, 1996) 6.

<sup>10</sup> Chris Gehler and Scott McConnell interviewed by author, November 8, 1999, personal notes, Fort Leavenworth, Kansas.

<sup>11</sup> Several Sources. Schneider, *Vulcan's Anvil*, details the evolution of operational art and its rise to predominance by virtue of distributed operations. Carl von Clausewitz, *On War*, (New Jersey: Princeton University

---

Press, 1984) stresses the significance of the army's military mass in relation to military potential of the nation. Shimon Nevah, *In Pursuit of Military Excellence* (Oregon: Frank Cass Publishers, 1997) reminds readers that technology and highly synchronized operations alone do not equate to a superior military force. Rather, the importance of mass must also appear in the ledger that represents total military potential.

<sup>12</sup> Schneider, "Cybershock: Cybernetic Paralysis as a New Form of Warfare." 6.

<sup>13</sup> Maurice Matloff, "Allied Strategy in Europe, 1939 - 1945," *Makers of Modern Strategy from Machiavelli to the Nuclear Age* (New Jersey: Princeton University Press, 1986) 623.

<sup>14</sup> *Army Vision 2010*, (Washington D.C.: Headquarters, Department of the Army) 6.

<sup>15</sup> Naveh, 9.

<sup>16</sup> Ibid., 234-235.

<sup>17</sup> Schneider, "Cybershock: Cybernetic Paralysis as a New Form of Warfare," 9.

<sup>18</sup> Deptula, 5.

<sup>19</sup> Ibid., 5.

<sup>20</sup> Thomas A. Keaney and Eliot A. Cohen, *Gulf War Air Power Survey Summary Report* (Washington D.C.: U.S. Government Printing Office, 1993) 117.

<sup>21</sup> R. Keith Lembke, "The Vision is Clear," *U.S. Army Aviation Digest* (July-August, 1994) 14.

<sup>22</sup> *National Military Strategy*, (Washington D.C.: U.S. Government Printing Office, 1995) 20.

<sup>23</sup> John W. Blumentritt, "Will Airpower, Specifically Helicopters, Replace Tanks in 2010?" *Armor* (September-October, 1998) 8.

<sup>24</sup> John A. Tirpak, "Shifting Patterns of Air Warfare," *Air Force Magazine* (April, 1997) 22.

---

<sup>25</sup> Ibid., 23.

<sup>26</sup> Ibid., 23.

<sup>27</sup> Pete Vozzo, "Capabilities and Expectations," *U.S. Army Aviation Digest* (July-August, 1992) 27.

<sup>28</sup> Ibid., 27.

<sup>29</sup> Ibid., 27.

<sup>30</sup> Ibid., 27.

<sup>31</sup> Benjamin L. Harrison, "Aviation: A Branch Decision Revisited," *Army* (July-August, 1991) 24.

<sup>32</sup> Dusty Rhoades (personal communication to Major General Tim Kinnan and Colonel Chris Warner, April 21, 1999) reflects personal impressions of the U.S. Army's attack aviation operations in support of NATO air operations during the Kosovo conflict.

<sup>33</sup> John Heaton (personal communication to Major General Tim Kinnan and Colonel Chris Warner, April 21, 1999) reflects personal impressions of the U.S. Army's attack aviation operations in support of NATO air operations during the Kosovo conflict.

<sup>34</sup> Field Manual 100-5, *Operations* (Washington D.C.: Headquarters Department of the Army, 1993) Glossary-2

<sup>35</sup> Richard C. Halblied and Mark M. Earley, "A Three-Dimensional Battlespace: The Army Must Transition Its Forces Into Advanced Airfighting Platforms," Armed Forces Journal (December, 1998) 51.

<sup>36</sup> Field Manual 1-100, *Army Aviation Operations* (Washington D.C.: Headquarters Department of the Army, 1997) 1-5.

<sup>37</sup> Bob Werthman, "Attack Aviation in Restricted Terrain," News From The Front (Fort Leavenworth, KS: Center for Army Lessons Learned, July-August, 1997) Article 3, 1.

<sup>38</sup> Lembke, 12.

---

<sup>39</sup> Carl H. Builder, *The Masks of War* (Baltimore, MD: The John Hopkins University Press, 1989) 38.

<sup>40</sup> Unknown, "Editorial: Shinseki's Shake-Up," *Army Times* (Springfield, VA: October 25, 1999) 60.

<sup>41</sup> FM 100-1, *The Army* (Washington D.C.: Headquarters Department of the Army, 1994) 6.

<sup>42</sup> Fogelman, 6.

<sup>43</sup> Heaton, personal correspondence.

<sup>44</sup> Benjamin S. Lambeth, "The Technology Revolution in Air Warfare," *Survival* (Spring, 1997) 72.

<sup>45</sup> Werthman, 1.

<sup>46</sup> Several Sources. Charles M. Burke and Donald C. Presgraves, "U.S. Army Operational Concept for Aviation," U.S. Army Aviation Digest (September-October, 1993). Scott A. Fedorchak, "Close Air Support: Repeating the Past ... Again?" Air Chronicles (April-June, 1994).

<sup>47</sup> Several Sources. FM 100-15, *Corps Operations* (Washington D.C.: Headquarters Department of the Army, 1996) 1-1. FM 71-100, *Division Operations* (Washington D.C.: Headquarters Department of the Army, 1996) 1-1.

<sup>48</sup> *Army Vision 2010*, 5.

<sup>49</sup> Field Manual 1-100, 1-6.

<sup>50</sup> Warren Schnell and Eugene McDonald, "Anytime, Any Place (Army Aviation Lessons Learned in Operation Desert Shield)," U.S. Army Aviation Digest (January-February, 1991) 6.

<sup>51</sup> Charles M. Burke and Donald C. Presgraves, 9-10.

<sup>52</sup> Werthman, 1.

<sup>53</sup> Rick D. Hancock, "Division Attack Helicopter Deep Operations," U.S. Army Aviation Digest (September-October, 1989) 64.

<sup>54</sup> Werthman, 1.

<sup>55</sup> Ibid., 1.

---

<sup>56</sup> Marvin Leibstone, "U.S. Army Aviation: The Gulf and Beyond. An Interview with Major General Donald R. Williamson and Brigadier General James H. Hesson," *Military Technology* (April, 1991) 25.

<sup>57</sup> Werthman, 1.

<sup>58</sup> Blumentritt, 8-9.

<sup>59</sup> Eugene Grayson, "Where do we go from here?" *US Army Aviation Digest* (March-April 1992): 45.

<sup>60</sup> Ibid., 45.

<sup>61</sup> Blumentritt, 10.

<sup>62</sup> Student Text 100-40, *Offensive and Defensive Tactics* (Fort Leavenworth, KS: USACGSC, 1999) 3-10.

<sup>63</sup> Burke and Presgraves, 10.

<sup>64</sup> J. David Robinson and Charles M. Burke, "Fighting Maneuver and Fires in the Third Dimension," *Field Artillery* (April, 1993) 12.

<sup>65</sup> Ibid., 11.

<sup>66</sup> Field Manual 1-100, 1-6.

<sup>67</sup> Burke and Presgraves, 11.

<sup>68</sup> Field Manual 1-100, 1-8.

<sup>69</sup> Ibid., 1-9.

<sup>70</sup> FM 101-5-1, *Operational Terms and Graphics* (Washington D.C.: Headquarters Department of the Army, 1997) 1-104.

<sup>71</sup> FM 100-5, *Operations* (Washington D.C.: Headquarters Department of the Army, 1993) 7-4.

<sup>72</sup> Lembke, 12

<sup>73</sup> Robinson and Burke, 12.

<sup>74</sup> FM 1-100, 1-10.

---

<sup>75</sup> Robinson and Burke, 11.

<sup>76</sup> Ralph Peters, "The Future of Armored Warfare," *Parameters*, (Carlisle Barracks, PA: U.S. Army War College Quarterly, Autumn, 1997) 53.

<sup>77</sup> FM 1-100, 1-12.

<sup>78</sup> Memorandum, General Carl E. Vuono and General Larry D. Welch, to General Colin L. Powell, chairman, Joint Chiefs of Staff, subject: Close Air Support, September 11, 1989.

<sup>79</sup> Sean D. Naylor, "Radical Changes: General Shinseki Unveils His 21<sup>st</sup> Century Plans," *Army Times* (October 25, 1999) 8.